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to the funds needed for the field work of the bureau, larger funds than are now available are required for carrying on the office work, for it is necessary to have highly trained men to prepare and care for the data used in making up these charts.

Lack of money prevents the bureau from obtaining a sufficient number of such men, and many of those at present in the service are leaving for better salaried positions elsewhere. There have been large numbers of resignations from the commissioned personnel and other scientific arms of the bureau, in fact, from all classes of the service, and it is expected that these conditions will continue until something is done to meet the situation.

The superintendent points out that the condition is so serious that it threatens to jeopardize public welfare, for, he says:

The commissioned officers are the lowest paid men of their training in the federal service. Their salaries, compared to those paid in the army and the navy for similar qualifications, are 30 to 50 per cent. less. Much of their work is more hazardous, requires special training, and takes them into all our country's possessions as the pioneer workers or navigators—surveyors who "blaze the trail" on land and sea. And no army or navy officer has greater qualifications, nor do they sacrifice more than the officer of the Coast and Geodetic Survey, yet the latter works for much the lowest salary, gets no longevity pay, no emoluments, and after he has given his best years to the service of his country he must retire without pay.

Too few persons realize the sacrifices a man of ability is making at the present time by remaining in the Coast and Geodetic Survey. Before this country entered the war conditions had grown to a serious stage, but since the signing of the armistice steady disintegration has gone on, and the situation has reached a point where the quality of the Survey's employees is declining principally under the stress of present economic conditions. Unless proper relief is forthcoming at once, and the present salaries are materially advanced, this important branch of the federal government, which has so much to do with the protecting of human lives, will, in a measure at least, be stripped of its best brains.

THE ROYAL MEDALS OF THE ROYAL SOCIETY

As has been noted in *SCIENCE* these medals were awarded to Professor John Bretland

Farmer and Mr. James Haywood Jeans. In conferring them on November 30 Sir Joseph Thomson, the president of the society, said:

Professor Farmer's work is characterized by the fundamental importance of the problems worked upon; thus his memoirs on the meiotic phase (reduction division) in animals and plants are of as great value to zoologists as to botanists, and his conclusions and interpretations of the complex nuclear changes which precede the differentiation of the sexual cells have stood the test of criticism, and remain the clearest and most logical account of these very important phenomena. His papers, in collaboration with his pupil, Miss Digby, on the cytology of those ferns in which the normal alternation of generations is departed from has thrown new light on problems of the greatest biological interest, and especially on the nature of sexuality. In his cytological work on cancerous growths Professor Farmer has established the close similarity between the cells of malignant growths and those of normal reproductive tissue.

Mr. Jeans has successfully attacked some of the most difficult problems in mathematical physics and astronomy. In the kinetic theory of gases he has improved the theory of viscosity, and, using generalized coordinates, has given the best proof yet devised of the equipartition of energy and of Maxwell's law of the distribution of molecular velocities, assuming the validity of the laws of Newtonian dynamics. In dynamical astronomy he took up the difficult problem of the stability of the pear-shaped form of rotating, incompressible, gravitating fluid at a point where Darwin, Poincaré and Liapounoff had left it, and obtained discordant results. By proceeding to a third order of approximation, for which very great mathematical skill was required, he showed that this form was unstable. He followed this up by the discussion of the similar problem when the fluid is compressible, and concluded that for a density greater than a critical value of about one quarter that of water the behavior is generally similar to that of an incompressible fluid. For lower densities the behavior resembles that of a perfectly compressible fluid, and with increasing rotation matter will take a lenticular shape and later be ejected from the edge.

MR. ROCKEFELLER'S GIFTS

THERE were announced on Christmas day two large gifts by Mr. John D. Rockefeller, \$50,000,000 to the Rockefeller Foundation and \$50,000,000 to the General Education Board, the money to be available for immediate use.